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71 Applicant: **AMPER S.A.**
Torrelaguna, 75
E-28027 Madrid(ES)

72 Inventor: **Moreno Del Collado, Francisco D.**
Torrelaguna 75
E-28027 Madrid(ES)
Inventor: **Prados Tomas, Jesus Maria D.**
Torrelaguna 75
E-28027 Madrid(ES)

74 Representative: **Carpintero Lopez, Francisco**
HERRERO & ASOCIADOS, S.L. Alcalá, 21
E-28014 Madrid(ES)

54 Coding terminal.

57 The coding terminal is a system which allows various coding functions to be carried out with a guarantee of confidentiality for the data introduced by the user via the keypad. It may be connected to a sales point terminal or any other system provided with an asynchronous interface and the appropriate software.

For this purpose it includes a hybrid circuit comprising a microcontroller, together with RAM and EPROM memory, interface circuits for controlling the keypad and display provided on the terminal and related electronic circuitry, in addition to means for connecting with other terminals.

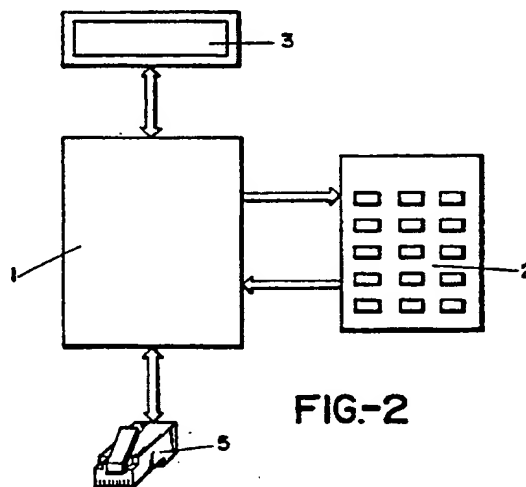


FIG-2

EP 0 388 571 A1

CODING TERMINAL

OBJECT OF THE INVENTION

The present invention, in accordance with the title of the specification, relates to a coding terminal, which, connected to a sales terminal or any other device having an asynchronous interface, and the appropriate software, allows various coding functions to be carried out with a guarantee of confidentiality for the data introduced by the user via the keypad provided.

BACKGROUND OF THE INVENTION

There currently exist on the market coding terminals which include special purpose circuits or microprocessors with masked control programs. This process poses problems when it is desired to change the control program for adapting the system to new applications, for the costs increase substantially when manufacturing very small series. Moreover, the design process and manufacturer delivery times for the components are generally long.

There also exist very versatile circuits as regards ease with which the control program may be changed, and security of the stored information, as is the case of the DALLAS DS 5000 microprocessor. The disadvantage lies in their high cost, and the need to usually depend on a sole supplier.

DESCRIPTION OF THE INVENTION

The coding terminal proposed by the invention solves the mentioned problems through the use of a hybrid circuit which combines adequate physical security and reasonable cost, avoiding at the same time the problem of dependence on sole supplier.

The hybrid circuit includes a microcontroller, RAM memory and PROM memory, and the necessary interface circuits for control of keypad and display.

A UART included in the microcontroller is used for obtaining a series interface through which the device is communicated to other terminals.

Amongst the functions it carries out is the calculation of an authentication parameter related to a secret number and a credit card, and date coding and decoding by means of a DES algorithm.

With the liquid crystal display which is optionally included, it likewise allows the user to "monitor" the operations carried out. This is of

special interest in sales operations, where the client can see the amount keyed in.

Security of the system lies in the fact that user's confidential data travels in a coded manner between the sales terminal and the coding terminal.

The design of the device described allows the use of a compact, light and ergonomic terminal, easy to use with only one hand, and intelligent, since it comprises a microprocessor, which makes it a programmable system, capable of carrying out complex operations of communication, coding and treatment of peripherals, with the possibility of storing codes in a non-volatile PROM and/or RAM memory with battery backup.

It is physically safe, since it is comprised by a hybrid circuit having with various processes for protection against unauthorized access to the data contained in its memory.

It is furthermore of low cost, since it uses few components, all of which are commonly used in all electronic designs, and a flexible design, given that contains a PROM memory chip with the control program. Installation of one memory type or other during manufacture of the device allows it to be adapted for different applications.

It may be connected to any system through an RS-232 interface, all that is required as a hardware interface being a simple circuit for changing signal levels.

It is provided for operation with a keypad having 15 or optionally 16 keys, and with a likewise optional a 32 character display.

DESCRIPTION OF THE DRAWINGS

In order to complete the description being made, and to assist the better understanding of the characteristics of the invention, a set of drawings is attached to the present specification, as an integral part thereof, where the following has been shown in an illustrative and non-limiting manner:

Figure 1.- Shows a general view of the coding terminal described by the invention.

Figure 2.- Shows a block diagram of the coding terminal which includes the constitutive parts thereof.

PREFERRED EMBODIMENT OF THE INVENTION

In the light of the figures, it can be observed that the coding terminal being described is comprised by a hybrid circuit including a microcontroller 80031, RAM memory and EPROM memory.

and the necessary interface circuits for controlling keypad 2 and display 3. The microcontroller in turn includes a UART which is used for obtaining the series interface by means of which the system is communicated to other terminals. For connection to the terminal, it is provided with a flexible cable 4 and a connector 5.

It is not considered necessary to extend the present description any further for a person skilled in the art to which it pertains to understand the scope of the invention and the advantages derived therefrom.

The materials, shape, size and arrangement of the elements may vary, provided such variation does not imply a modification of the essentiality of the invention.

The terms used in the description of the specification should be understood to have a wide and non limiting meaning.

Claims

1.- CODING TERMINAL which, connected to a sales terminal or any other system provided with an asynchronous interface and the appropriate software, the object thereof being to effect various coding functions with a guarantee of confidentiality for such data as may be introduced by the user via a keypad, is essentially characterized in that it is constituted by a hybrid circuit including a microcontroller, RAM memory, EPROM memory, and interface control circuits for a keypad 2 and a display 3, in addition to the related electronic circuitry, which microcontroller includes a series interface comprised by a UART through which it is related to a flexible conductor 4 and a connector 5 for its connection to other terminals.

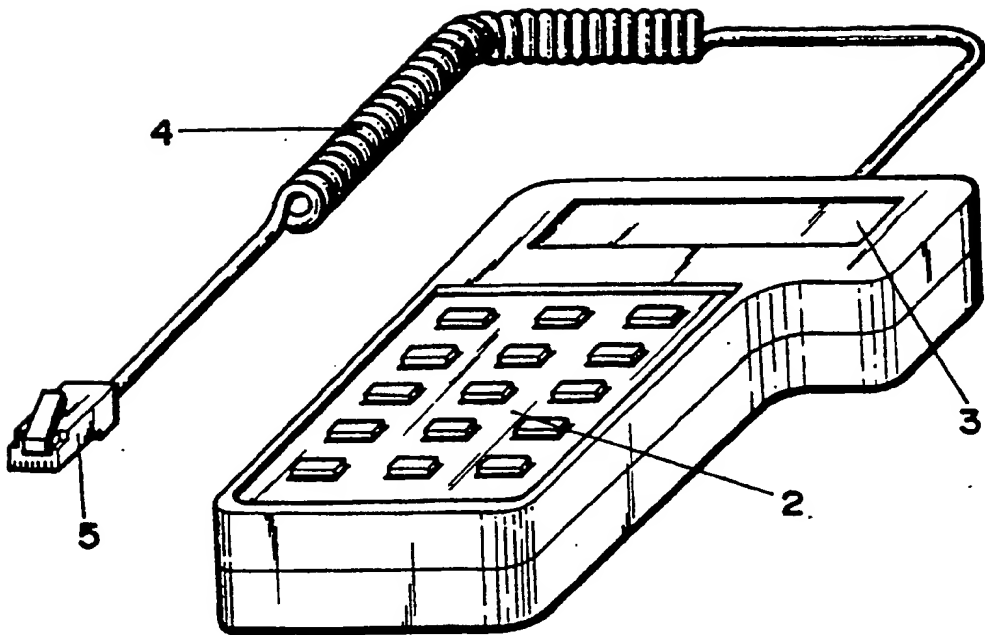


FIG-1

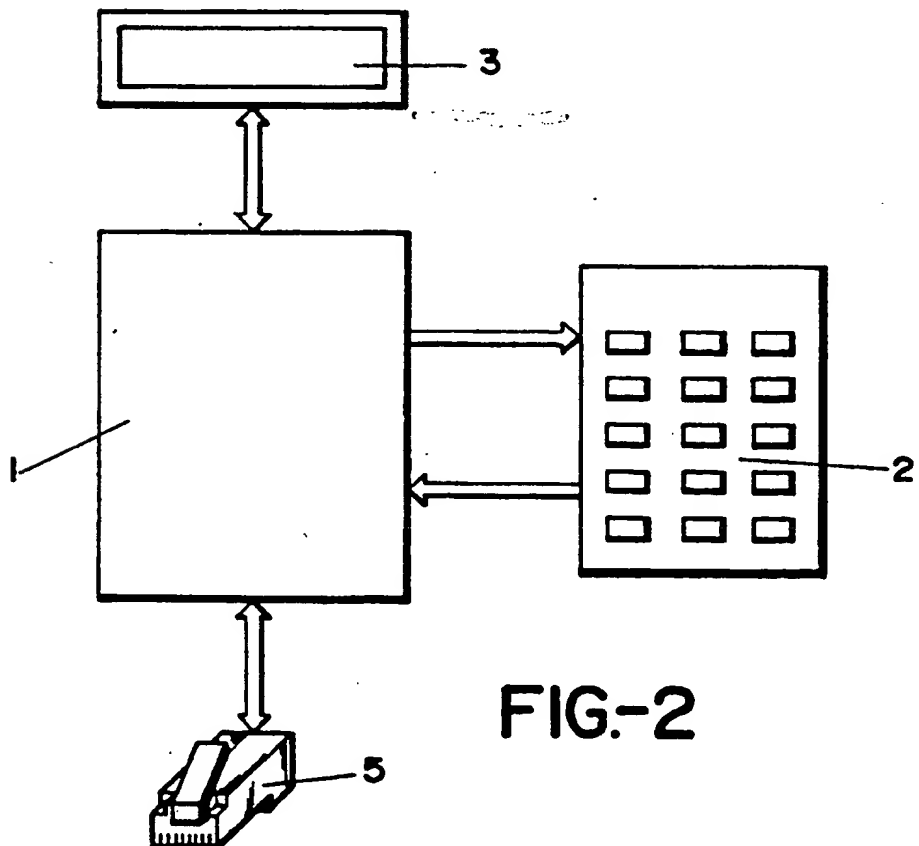


FIG-2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 50 0131

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	FR-A-2596176 (ELECTRONIQUE SERGE DASSAULT) * page 2, lines 10 - 27 * * page 4, line 26 - page 6, line 6; figures 1-2 *	single, claim	G07F7/10 G07G1/00
A	EP-A-196192 (IMPERIAL OIL LIMITED) * page 8, line 18 - page 12, line 5 * * page 12, line 33 - page 17, line 33; figures 1, 3-5 *	single, claim	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			G07F G07G
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27 JULY 1990	Examiner HERBELET J. C.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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